

Additional Instructions

Remaining thread monitor

IMPORTANT
READ CAREFULLY BEFORE USE
KEEP FOR FUTURE REFERENCE

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1 General information

The remaining thread monitor (RTM) can be used with all 1-needle and 2-needle machines equipped with a thread cutter.

Check whether the scope of delivery for the kit is complete prior to installation. The complete kits for installing and setting the remaining thread monitor consist of the following parts:

Description	Part number	0868 590014 1-needle	0868 590024 2-needle
RTM carrier	0868 360014	1	2
Holder	0667 155840	1	1
Cover	0667 155930	1	1
Hose	0699 979265	1	1
Bobbin	0867 150240	3	6
Column cap	0868 360020	1	2
O-ring	0911 000478	1	1
Hose connector	0999 240389	1	1
Cheese-head screw M4 x 12	9202 002087	4	8
Cheese-head screw M3 x 16	9203 003097	2	2
Cheese-head screw M3 x 30	9203 003157	2	2
Pan-head screw M2 x 20	9204 200517	2	2
Pan-head screw M4 x 10	9204 201667	9	9
Washer	9330 000087	4	4
Magnet valve	9710 061200	1	1
Silencer	9710 982003	1	1
Y-connection piece	9790 030020	1	3
Spacer	9830 501010	4	4
Mounting clip	9840 120025	3	3
Cable holder for cable tie	9840 120106	2	2
Cable tie	9840 121002	3	3
Circuit board	9850 867003	1	1
Cable	9870 367003	1	1
Cable	9870 867003	1	1
Right slide	0868 140350	1	1
Left slide	0868 140360	1	1
Connection plate	9710 900031	1	1

2 Assembling the remaining thread monitor

2.1 Replacing bobbin case and column cap

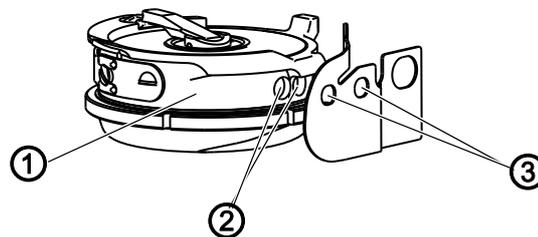


Important

Machines built **BEFORE** 2014 require that the bobbin case be replaced. Machines built **IN** 2014 or later no longer require this replacement.

The bobbin case (1) needs to be replaced only if the holes (2) are NOT present. The spring 0868 350170 also needs to be replaced only if the holes (3) are NOT present..

Fig. 1: Replacing the bobbin case



(1) - Bobbin case
(2) - Bobbin case holes

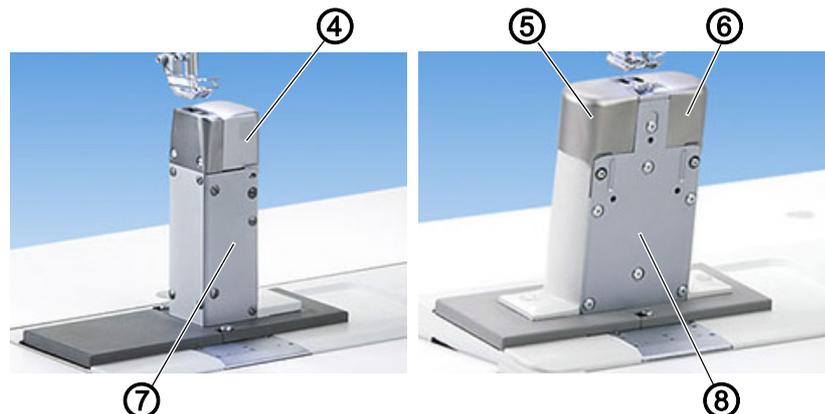
(3) - Spring holes



To replace the bobbin case and column cap:

1. If necessary, remove the bobbin case (1) and insert a suitable bobbin case with holes (2).
2. If necessary, replace the spring 0868 350170 in the thread cutter.

Fig. 2: Replacing the column cap



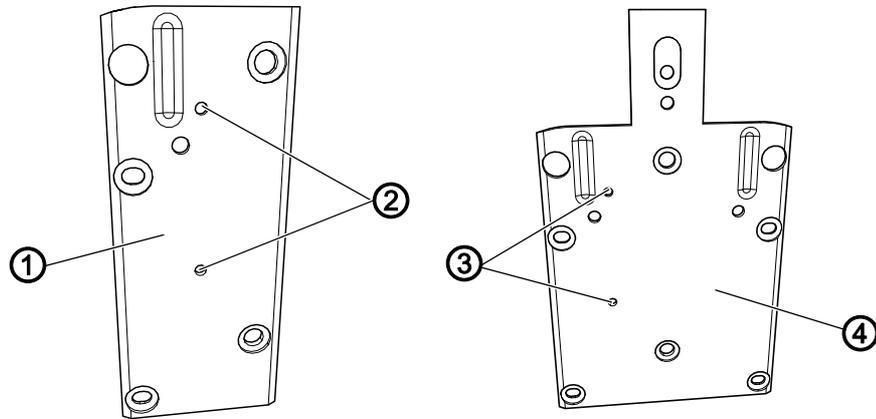
(4) - Column cap
(5) - Column cap, left
(6) - Column cap, right

(7) - Side plate 1-needle machine
(8) - Side plate 2-needle machine

3. Remove column cap (4) of the 1-needle machine or column caps (5) and (6) of the 2-needle machine before assembling the new column caps.

2.2 Drilling holes into the side plate

Fig. 3: Drilling holes into the side plate



(1) - Side plate 1-needle machine
(2) - Holes

(3) - Holes
(4) - Side plate 2-needle machine



To drill the side plates:

1. If the M4 holes (2) / (3) for the remaining thread monitor are not there, they must be drilled using the 0868 360040 drilling template, [6 Appendix](#), p. 16.
2. To do so, unscrew side plates (1) / (4) and drill the holes before assembling the plates again.

2.3 Assembling the light barrier

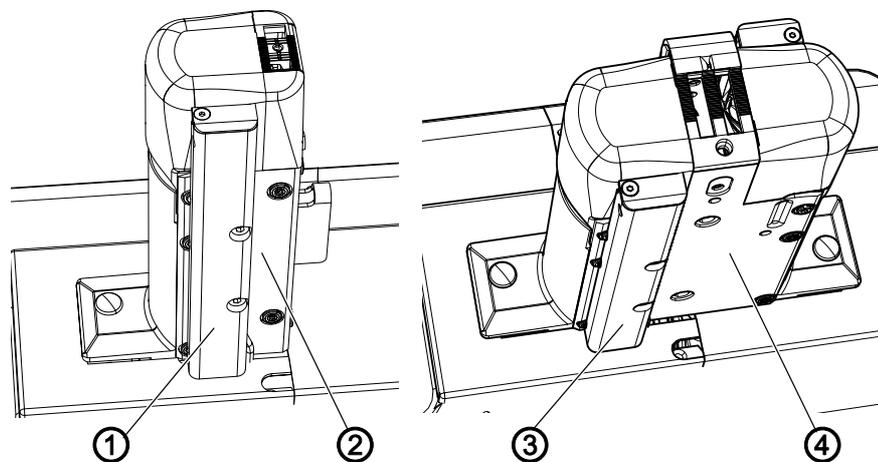
NOTICE

Non-observance will lead to property damage!

Improperly laid cables can be chafed or pinched, causing them to sustain damage.

Always lay the cables so as not to create any chafing or pinching points.

Fig. 4: Assembling the light barrier



(1) - Carrier

(2) - Side plate 1-needle machine

(3) - Carrier

(4) - Side plate 2-needle machine



To assemble the light barrier:

1. Screw the pre-installed carrier (1) / (3) to the side plate (2) / (4).
 The hoses and cables come out the bottom of the carrier.
2. Lay hoses and cables along the oil wick under the base plate and fix them in place with cable ties.

2.4 Tightening and connecting the control

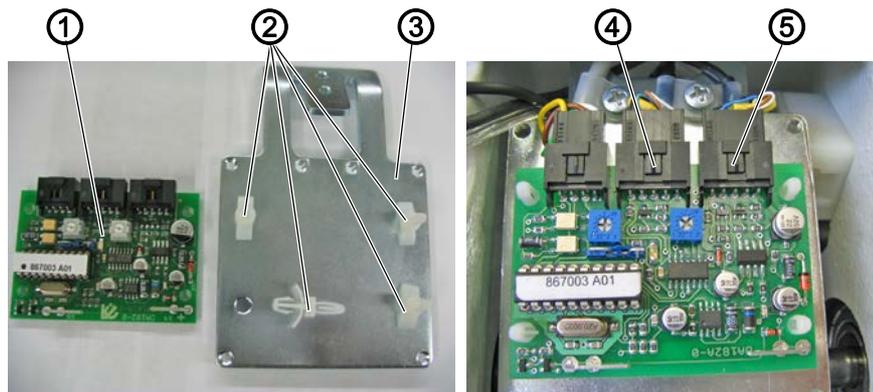
NOTICE

Non-observance will lead to property damage!

Improperly laid cables can be chafed or pinched, causing them to sustain damage.

Always lay the cables so as not to create any chafing or pinching points.

Fig. 5: Tightening and connecting the control



- (1) - Circuit board
- (2) - Spacer
- (3) - Carrier plate

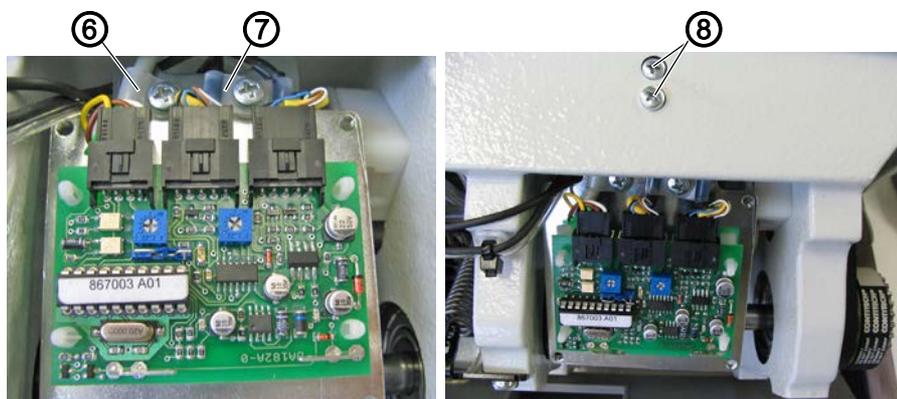
- (4) - Connection for the light barrier, left needle
- (5) - Connection for the light barrier, right needle



To connect the remaining thread monitor to the control:

1. Insert the spacers (2) (4x) into the holes on the carrier plate (3) and place the circuit board (1) onto them.
2. Slip the cables onto the circuit board (1), making sure that connections (4) and (5) are used for the left and the right needle, respectively.

Fig. 6: Assembling the carrier plate

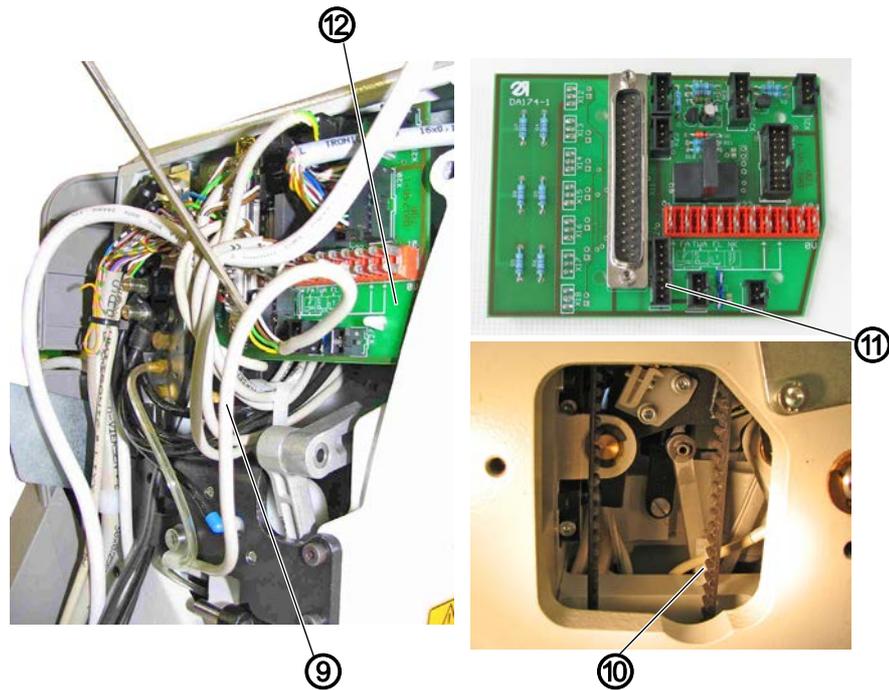


- (6) - Mounting clip
- (7) - Mounting clip

- (8) - Screws (2x)

3. Assemble all cables to the base plate of the remaining thread monitor with mounting clips (6) and (7).
4. Screw the carrier plate (3) with the pre-installed circuit board (1) into the base plate using the screws (8).

Fig. 7: Laying the cables



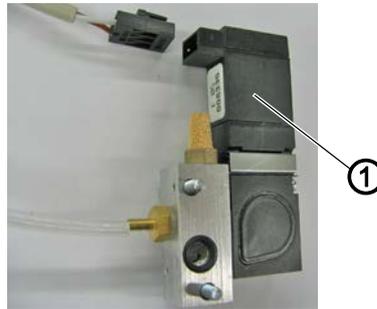
(9) - Cable
(10) - Cable holder

(11) - X24 plug connection
(12) - Valve circuit board

5. Insert the cable (9) from the remaining thread monitor to the valve circuit board (12) through the cable holder (10) located in the machine arm.
6. Connect the cable (9) in the valve circuit board (12) to plug connection X24 (11).
7. Insert the light barrier cables through the holes in the base plate and assemble them with cable ties to the available lines (electric cables/ pneumatic and oil hoses).
8. Roll up the light barrier cables which are too long and assemble them to the base plate of the remaining thread monitor with cable ties.

2.5 Tightening and connecting the valve

Fig. 8: Tightening and connecting the valve



(1) - Valve



To assemble the valve:

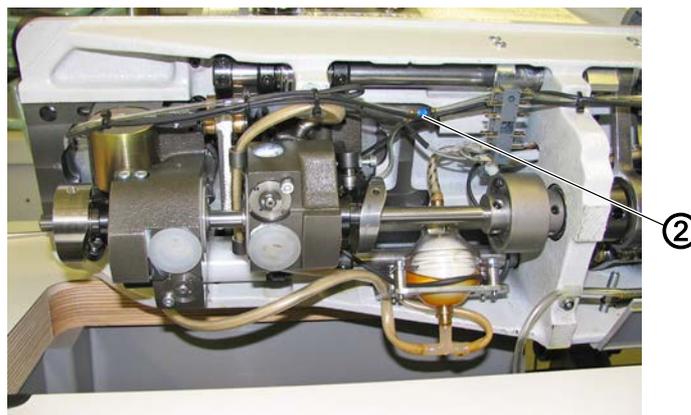
1. Pre-assemble the valve (1), ensuring that the sealing washer is in the correct position.
2. Screw the valve (1) to the valve strip; remove the valve unit for this purpose.
3. Screw the valve unit in again.
4. Connect the hose from the light barrier to the valve.



Information

When using the left and right light barriers, connect the hoses with the Y-piece (2).

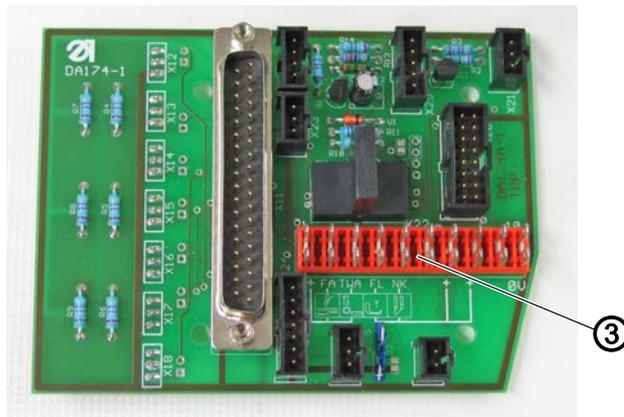
Fig. 9: Y-piece for 2 light barriers



(2) - Y-piece

5. Assemble the hose and the cable to the oil return line and to the knee lever shaft with a cable tie.

Fig. 10: Connecting the magnet valve



(3) - X22 plug connection

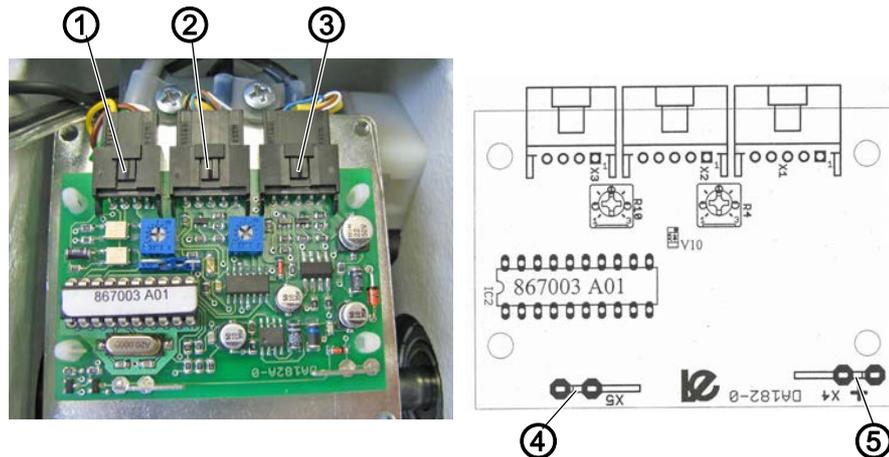
6. Connect the magnet valve to the valve circuit board: if the X22 plug connection (3) is heavily soiled, use PIN 1/7/8 (+) and PIN 4 (FL). If the X22 plug connection (3) is not heavily soiled, use PIN 1/7/8 (+) and PIN 2 (FA).

3 Electrical fine adjustment

The remaining thread monitor ships with a basic setting which usually does **NOT** require that the sensitivity of the remaining thread monitor be adjusted!

The pre-set sensitivity may only be changed if the remaining thread monitor is not working properly.

Fig. 11: Electrical fine adjustment



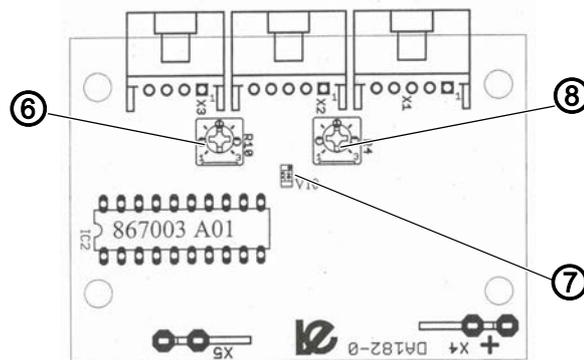
- (1) - X3 plug connection
- (2) - X2 plug connection
- (3) - X1 plug connection

- (4) - X5 plug connection
- (5) - X4 plug connection

Connections of the circuit board

Plug connection	Connection
X1 plug connection	Light barrier right hook
X2 plug connection	Light barrier left hook
X3 plug connection	Inputs and outputs of the higher-level control
X4 plug connection	Auxiliary output (+24V) for e.g. a pulse emitter or sewing lamp
X5 plug connection	Switched output, max. current 70 mA

Fig. 12: Sensitivity of the light barrier



(6) - Potentiometer, left needle

(8) - Potentiometer, right needle

(7) - LED



To set the sensitivity:

After the machine has been switched on and before it starts sewing, the remaining thread monitor is in setting mode.

1. Insert a new bobbin into the corresponding hook.
2. Set the hook to a position that affords the light barrier an unimpeded view of the bobbin through the slot in the hook housing.
3. Set the potentiometer to the highest sensitivity (turn clockwise).
 - Potentiometer (8) (R4) for the right hook, X3 plug connection (1).
 - Potentiometer (6) (R10) for the left hook, X2 plug connection (2).
4. Manually turn the bobbin on the hook until a reflecting surface is found.
- ↳ LED (7) (V19) illuminates for 1 second, and the output to the control and the auxiliary output are switched on.
5. Reduce the sensitivity with the potentiometer (turn counterclockwise) until the reflection off the bobbin can just be detected.



Information

When sewing begins, the system leaves setting mode. In setting mode, LED (7) illuminates for one second with every reflection.

4 Setting the parameters

4.1 Efka

Sewing drives: DC1600 - DA82GA, DC1550 - DA32G

Recommended mode for remaining thread monitor function: **F-195** to value "3"

Possible parameter settings for the remaining thread monitor:

Parameter	Value	Function
F-195	0	Remaining thread monitor inactive
	1	No stop after 1st detection bobbin empty, Sewing foot down after thread cutting
	2	With stop after 1st detection bobbin empty, Sewing foot up after thread cutting
	3	With stop after 1st detection bobbin empty, Sewing foot down after thread cutting
	4	Hook thread monitoring via preset number of stitches. Light barrier remaining thread monitor control without function.
F-195 085	1-3	Number of stitches for remaining thread (0-9990). Count from 1st detection "bobbin empty" until stop.
F-195 085 086 087	4	Number of stitches A for hook thread monitoring (0-9990) Number of stitches B for hook thread monitoring (0-9990) Number of stitches C for hook thread monitoring (0-9990) Pre-set number of stitches is counted downwards to "0". When value "0" is reached: Stop at value "0" and after thread cutting sewing foot down.

4.2 DAC basic/classic

Recommended settings for the function of the remaining thread monitor:

o 06 00 = 4, o 06 06 = 1, o 06 07 = 1

Possible parameter settings for the remaining thread monitor:

Parameter	Value	Function
o 06 00	0	Remaining thread monitor inactive
	1, 2, 3	Remaining thread monitor with pre-set number of stitches (A, B, C)
	4	Remaining thread monitor active
o 06 06	0	No stop after 1st detection bobbin empty
	1	With stop after 1st detection bobbin empty
o 06 07	0	Sewing foot up after thread cutting
	1	Sewing foot down after thread cutting

5 Operating the remaining thread monitor

WARNING



Risk of injury from moving parts!

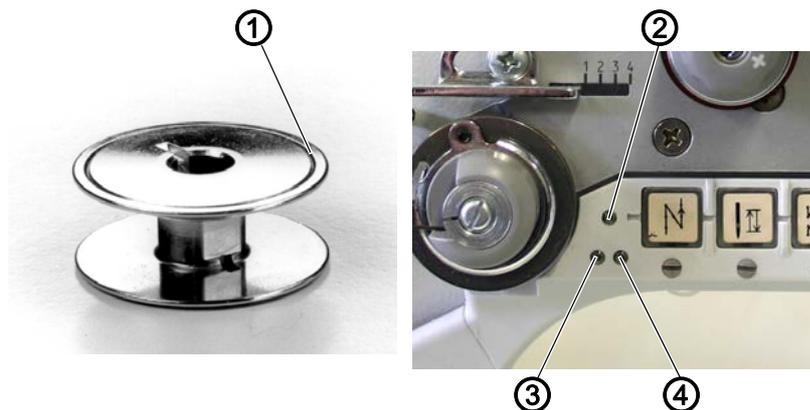
Crushing possible.

Switch off the machine before inserting/changing the bobbin!

Requirements

- The bobbin is inserted so that its groove (1) points downward.
- LED (2) lights up when the machine is switched on.
- If the light beam from the light barrier is reflected off the surface of the bobbin core during sewing:
 - ↪ the sewing process stops,
 - ↪ and/or LEDs (3) and (4) for the respective remaining thread monitor are blinking (for the left (3) or the right (4) or for both remaining thread monitors (3) and (4)).

Fig. 13: Operating the remaining thread monitor



(1) - Groove
(2) - LED

(3) - LED
(4) - LED



To operate the remaining thread monitor:

1. The remaining thread monitor detects when the hook thread bobbin is, except for a small residual amount, empty.
2. Release the pedal and press the pedal forward again to complete the stitch.



Information

The amount of thread in the groove (1) of the bobbin is usually sufficient.

3. Press the pedal to the rear to cut the thread.
 - ↪ The blowing operation to keep the light barrier clean is activated concurrently with the thread cutting or the sewing foot lift.
 - ↪ If a bobbin is changed after thread cutting, the LEDs will go out after approx. 14 stitches in the following seam. The automatic sewing foot lift will also operate again after thread cutting.



Information

If the prompt to change the bobbin is ignored, LEDs (3) and (4) will continue to blink, and the sewing foot will not be lifted automatically after the thread is cut the next time.

Winding the hook thread

WARNING



Risk of injury from moving parts!

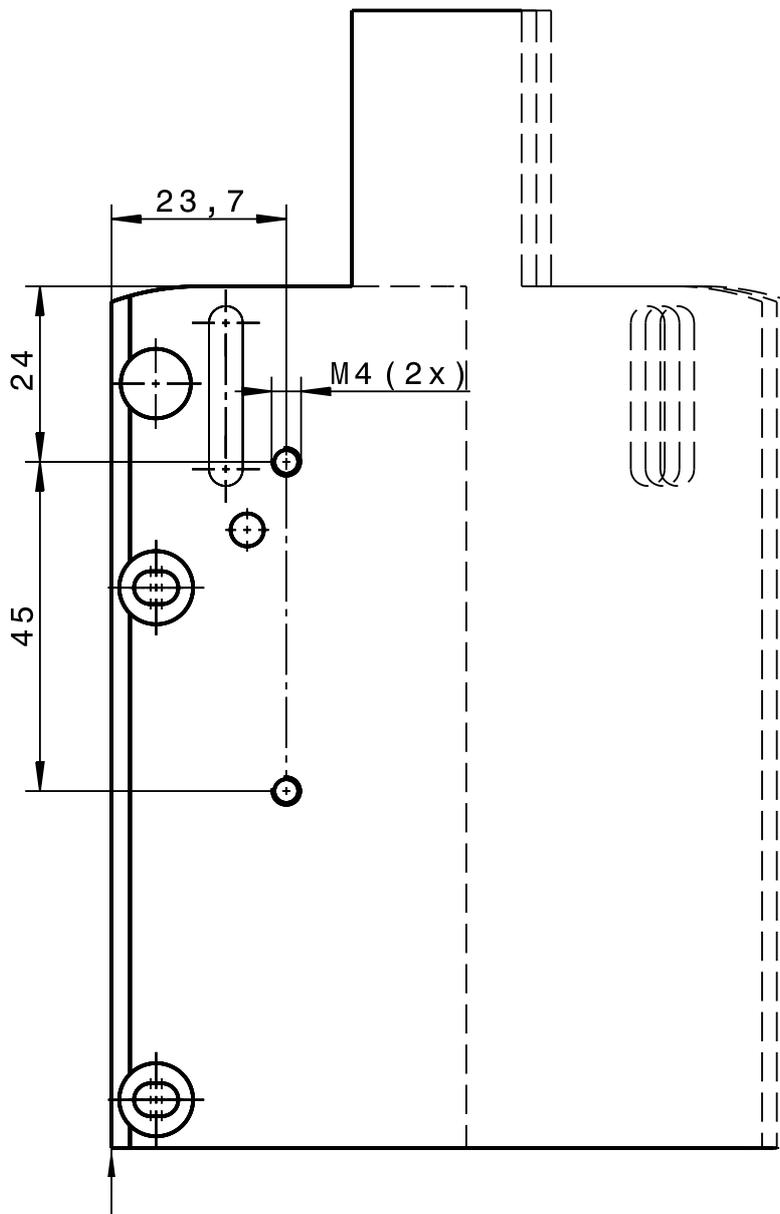
Crushing possible

Switch off the machine before inserting/changing the bobbin!

When winding the thread, the bobbin with the groove (1) must be inserted pointing to the rear on the winder.

6 Appendix

Fig. 14: Drilling template - column cap



**Line up the template with this edge.
The width of the side plate varies with the needle
distance**

Needle distance	Side plate
8	0868 142250
10	0868 142310
12	0868 142370
14	0868 142430
16	0868 142490



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